

A NOTE ON *PHEIDOLE* (*MACROPHEIDOLE*)
RHEA WHEELER (HYMENOPTERA:
FORMICIDÆ)

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This species was described by Wheeler (1908), from a single, very large, deälated female collected at Nogales, Arizona. Though later synonymized (Wheeler, 1915), with *Pheidole fimbriata* Roger of tropical America, M. R. Smith (1943), has reviewed in detail the status of *Pheidole rhea*, drawing pertinent distinctions between it and *fimbriata*. He has shown that *rhea* deserves specific rank, and has provided a description of both the soldier and the worker castes.

Through the assistance of Mr. L. F. Byars and Mr. J. B. Zuck, I have received a large series of specimens of *Ph. rhea* from the type locality, representing all castes with the exception of the males. The ants were obtained at different periods from the same colony located near the top of a dry hillside on Washington Drive, Nogales, Arizona. The site was characterized by very rocky soil originally covered with coarse desert grasses and weeds. Fortunately, my wife and I were able to visit the spot in April, 1948, and collect additional material before the nest was completely destroyed by landscaping. It was first discovered under a stone, but had moved after being disturbed. The total number of specimens secured are as follows, according to caste: 201 soldiers, 262 workers (*media*), and 274 workers (*minima*). The species is highly polymorphic, and for convenience several size classes of individuals are grouped as *media*, although no sharp gaps are detectable in the series from largest to smallest individuals. One deälated female was captured by Mr. Zuck from under a stone, and though isolated, is believed to have come from the same nest as

the above series. Dates on which the ants were obtained are March 2, 1947 (wingless female), June 18, 1947; March 29, April 10, April 14, and April 25, 1948. Besides these specimens, a few soldiers and numerous workers have been added to our collection from Colossal Cave State Park, southeast of Tucson, Arizona, which we visited on April 20, 1948. The ants were collected as they foraged for the seeds of various desert plants near the entrance to the cave.

On comparing my material with the detailed descriptions published by Smith for the soldier and worker of *rhea*, it seemed that a new form of the species might be recognized, especially in view of the much greater size of the soldiers in my samples and certain differences in the queen. However, after studying specimens from the Pinal Mountains and the Santa Catalina Mountains of Arizona (sent respectively through the courtesy of the United States National Museum and the Museum of Comparative Zoology), the variability of the species noted by Smith is fully confirmed, and it is impossible to discern adequate bases for erecting a new subspecies at this time. Nevertheless, it is desirable to record certain features of my Nogales specimens which depart from the published accounts.

The great variability and continuous gradation in size from the smallest to the largest individuals makes it difficult to distinguish *rhea* from other species if only the smaller intermediates are available, although its long epinotal spines should suffice. The upper size limit of the soldier has been uncertain, and Smith gives 5.5 mm. as the size for the soldier in his description. He does mention, though, an unusual soldier from Escuinapa, Mexico, which is 8 mm. The soldiers which I have measured reach 9.8 to 10.2 mm. in the largest size class, and may be regarded as the probable upper limit since they approach the queen which is 14.3 mm. (Wheeler). This increase over the 8 mm. linear dimension noted by Smith, is accentuated by the allometric growth in proportions of the head which accompany it, rendering the soldiers quite huge. The width of the soldier head varies from

3.3 mm. to 3.7 mm., while its length, excluding the mandibles, varies from 3.6 mm. to 4.0 mm. All possible intermediates connect the soldier with the smallest worker which measures 3 mm. (Smith), or 4 mm. among my material.

Ph. fimbriata is furnished with tufts of short, dense, erect hairs on the under surfaces of the petiole and post-petiole, while these are absent on *rhea* (s. str.). The ants before me show a few, spaced hairs in those positions. Also, some of the intermediate sizes possess a slender, acute, erect spine on the ventral aspect of the petiolar peduncle, and others show an aborted spine, while most have only a slight elevation. The eyes of the *rhea* soldier have 15 facets, according to Smith, but my examples show only 13 to 14 facets; *fimbriata* has 11 or 12. The color of the largest soldiers and some of the intermediates is somewhat lighter than that indicated in the description, or of those received for study; it is distinctly red on the middle and posterior portions of the head, though the thorax and abdomen are brownish to black.

The single specimen of wingless female in my possession differs also from Wheeler's description of the type, and is probably another indication of the considerable variation to which the species is subject. The head is distinctly broader than long (exclusive of the mandibles), and the posterior border of the orbit is precisely at the middle of the head, rather than in front of it. The clypeus has an obvious median elevation or carina, and a broad, shallow emargination, opposite to the condition of these structures in Wheeler's specimen. The thorax through the wing insertions is as broad or broader than the head through the posterior corners (narrower in *rhea*), the petiole is subquadrate rather than suborbicular, and the mesonotum is not shagreened, but very smooth and shining with a few striations near the middle of the posterior border and on the sides of the anterior border. The gaster is distinctly shagreened and feebly shining. In size, this ant is 14 mm., and therefore not quite as long as Wheeler's specimen.

In view of the fact that Wheeler described *rhea* from a lone female, the marked variability of the other castes subsequently obtained, and the lack of females definitely known to be from the same colony as the series of soldiers and workers in the Nogales nest, it is advisable to withhold description of a new form unless indicated otherwise by additional material.

LITERATURE CITED

- Smith, M. R.
1943. *Pheidole (Macropheidole) rhea* Wheeler, a valid species. Proc. Ent. Soc. Wash., 45: 5-9.
- Wheeler, W. M.
1908. The ants of Texas, New Mexico and Arizona. Bull. Amer. Mus. Nat. Hist., 24: 399-485.
1915. Some additions to the North American ant-fauna. Bull. Amer. Mus. Nat. Hist., 34: 389-421.